Topic 7: Build and Testing In Jenkins

Introducting Maven

Apache Maven is a popular build tool, that takes your project's Java source code, compiles it, tests it and converts it into an executable Java program: either a .jar or a .war file.

Mvn clean install means

You are calling the mvn executable, which means you need Maven installed on your machine.

You are using the clean command, which will delete all previously compiled Java .class files and resources (like .properties) in your project.

Install will then compile, test & package your Java project and even install/copy your built .jar/.war file into your local Maven repository.

Maven directory layout

Maven’s pom.xml

Maven’s src & target folders

Testing

One of the basic principles of Continuous Integration is that a build should be verifiable. You have to be able to objectively determine whether a particular build is ready to proceed to the next stage of the build process, and the most convenient way to do this is to use automated tests.

Without proper automated testing, you find yourself having to retain many build artifacts and test them by hand, which is hardly in the spirit of Continuous Integration.

Unit Test

Unit Tests are conducted by developers and test the unit of code.

It is a testing method by which individual units of source code are tested to determine if they are ready to use. It helps to reduce the cost of bug fixes since the bugs are identified during the early phases of the development lifecycle.

Intergration Test

Integration testing is executed by testers and tests integration between software modules.

It is a software testing technique where individual units of a program are combined and tested as a group.

Test stubs and test drivers are used to assist in Integration Testing.

Xunit – Junit Testing

There are many unit testing tools out there, with the xUnit family holding a predominant place.

In the Java world, JUnit is the de facto standard,

MSTtest for .NET unit test cases.

For C# applications, the NUnit testing framework proposes similar functionalities to those provided by JUnit,

Test::Unit for Ruby.

For C/C++, there is CppUnit, and PHP developers can use PHPUnit.